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Docket Management
Room PL-401
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, DC 20590

**Re.: Nissan Comments on NHTSA Comments Request for MYs 2005~2010 CAFE Standards [Docket No. 2002-11419]**

Nissan North America, Inc., with the authorization of Nissan Motor Company, LTD of Tokyo, Japan, the manufacturer of Nissan and Infiniti vehicles ('Nissan'), hereby transmits its comments in response to NHTSA's request for comments concerning MYs 2005~2010 CAFE standards.

If you or your staff have any questions or require further information regarding this submission, please contact Yasumi Nakamura-Newbraugh at (703) 456-2565.

Sincerely yours,

Harland Reid

Harland Reid
Senior Director, Government Affairs
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Nissan North America, Inc.

NNA-21 DC

**DEPARTMENT OF TRANSPORTATION**
**National Highway Traffic Safety Administration**
**49 CFR Part 533**
**[Docket No. 2002-11419]**
**RIN 2127-AI70**
**Request for Comments**
**National Academy of Science Study and**
**Future Fuel Economy Improvements**
**Model Years 2005-2010**

Nissan North America, Inc., on behalf of itself and its parent corporation, Nissan Motor Company, Ltd. (collectively "Nissan"), appreciates this opportunity to provide comments to the National Highway Traffic Safety Administration ("NHTSA" or "the Agency") regarding the feasibility for increasing the Corporate Average Fuel Economy ("CAFE") Standards for model years 2005 - 2010. Nissan provides its comments in the form of responses to the Agency's questions in NHTSA's Request for comments. See 67 Fed. Reg. 5767 (2002).

From the outset, Nissan agrees with the principle that CAFE standards can be raised from the current levels. However, as provided below in greater detail, Nissan believes that establishing higher future CAFE standards is a complex issue that must take into consideration a variety of factors. Nissan believes that factors that, at a minimum, must be considered and addressed include:

- The technological feasibility of an increased standard;
- The economic impact of those increased standards,
- The lead time necessary for manufacturers to comply with those new standards; and
- The effect any mandated increase will have on other vehicle attributes such as weight and safety.

In addition to these factors, Nissan also urges NHTSA to take this opportunity to review the issue of separate calculations of domestic and import fleets by a single manufacturer. Nissan does not believe that given the global status of vehicle manufacturing, including the increasing investment in manufacturing facilities in the United States, that separate fleet calculations are justified. Although Nissan realizes that any change to the "fleet-split" provisions of CAFE must be performed by an Act of

Congress, the Company, nonetheless, urges NHTSA to consider the impacts from this provision when contemplating any increase in current CAFE standard. Finally, Nissan believes that part of any change in the CAFE system should include a broad credit trading scheme to allow maximum flexibility to manufacturers in being able to meet the standards through incorporation of new technologies and innovative approaches.

With this introduction, Nissan now turns to specific questions asked by NHTSA. Nissan notes that the Company has not attempted to answer every question posed by the comment request, but instead, has concentrated on those questions of key importance and those areas in which Nissan is able to provide meaningful comment.

## I. Factors to Consider in Establishing Higher CAFE Standards

### A. Fuel Efficiency Technology

***NHTSA Question 2.*** *What is the technological feasibility and economic practicability of various fuel efficiency enhancing technologies that fall under the general headings of engine, vehicle and transmission technologies?*

As demonstrated in Confidential Attachment 1, Nissan generally supports the NAS analysis of various fuel efficiency improvement technologies. Nissan also notes, however, that not all of the points contained in the NAS' analysis are completely accurate. For instance, many of the short-term technologies cited by the NAS for future incorporation in vehicles have already been adopted. Therefore, NHTSA cannot rely upon implementation of these technologies to improve fuel efficiency since they have already been applied in the real world. Specific examples of these technology items already in use include multi-valve, overhead camshaft valve trains, and automatic transmissions with aggressive shift logic.

In addition, based on our evaluation, we disagree with the NAS' conclusion that 42V electrical systems could, by themselves contribute to fuel efficiency improvements. Fuel economy improvements from 42V systems derives from electric power steering and engine accessory efficiency improvements. These items are counted as separate technologies in NAS study. Accordingly, 42V systems, in and of themselves, do not necessarily provide increased fuel efficiency. In addition, during introduction of 42V systems, many vehicles may still retain 12V systems, because 12V accessories may remain. Therefore, fuel savings would be limited. Based on this analysis, Nissan believes that compared to the fuel savings obtained from systems that utilize 42V systems,

the cost of such electric systems is prohibitively high. If required, Nissan believes that incorporation of 42V systems would be accomplished by Path 1 (i.e., by 2004).

With regards to other technologies cited by the NAS report, Nissan also believes that NAS overstates the benefits from those technologies as well. Specifically some of these available and upcoming technologies will not allow the cumulative improvement of fuel efficiency. In fact, some of the technology items simply cannot be combined. For example, only one item can be applied to a vehicle from valve trains technologies group (either variable valve timing, variable valve lift timing, cylinder deactivation, intake valve throttling, or camless valve actuation). Also, only one item can be applied from transmission technologies group (either 5 speed automatic transmission, CVT, or 6-speed automatic transmission). Accordingly, the benefits from fuel efficient technologies is overstated in the NAS report.

Other technology cited by the NAS report is simply not capable of broad application. For example, Nissan believes that cylinder deactivation technology is limited to large displacement engines, like the V8, because of the substantial likelihood of noise/vibration problems in smaller engines (i.e., I-4 or V6 engines) if this technology is applied. Nissan also believes that intake valve throttling technology may be problematic due to issues of high cost, drivability and durability. Nissan does not believe these issues can be resolved by Path 2. Another example of fuel savings technology with limited application involves the automatic shift manual transmission technology. While this technology does improve fuel economy, Nissan believes that applying this technology in the US will be difficult because of the U.S. market's preference for automatic transmission technology. Moreover, manufacturers have put into place systems that support the current, preferred automatic transmission in vehicles. Changing both the market preference and revising the current system would come at enormous cost with no guarantee of acceptance by consumers. Based on market analysis, Nissan is doubtful that new transmissions such as automatic shift manual transmission technology can replace the current automatic transmission. Because of the overstatement of the potential benefits from fuel efficient technologies stated in the NAS report, Nissan urges NHTSA to carefully review the actual ability of fuel efficient technologies to operate as part of any effort to raise CAFE standards. Any increase in the standard must be technologically feasible based on a complete analysis of current and future technologies. Otherwise, manufacturers could potentially face legal mandates that are technologically impossible to meet.

## B. Economic Impact of Increased Standards

*NHTSA Question 3. What is the cost-effectiveness of each technology identified in Question 2, as well as any other relevant technologies, assuming alternative plausible gasoline prices forecast for MY 2005-2010, and assuming alternative payback periods ranging from 3 years to 10 years?*

*NHTSA Questions 18. Do you believe that the NAS study over or under estimated the fuel economy benefits from specific technologies? If so, which ones and why? Please provide NHTSA with your data that suggest a different benefit resulting from the application of these technologies.*

In addition to technological feasibility, NHTSA must also consider cost to manufacturers when reviewing the appropriate increase level for CAFE standards. For example, due to the high cost of mid and long term technologies, (i.e., mainly in Path 2 and 3) the future development and economic practicability of such technologies' is uncertain. To provide an example of how such technologies may not be justified by their cost, Nissan recalculated the incrementalcosts and fuel efficiency improvements offered by the technologies outlined in the NAS report. See Confidential Attachment 2. These calculations exclude technology already adopted by Nissan and the technology double counted by NAS. [redacted]

Because of the high costs associated with newer technologies aimed at increasing fuel efficiency, Nissan believes that NHTSA should impose increased CAFE standards only after careful analysis of the economics and other factors associated with available means to improve technology. In fact, Nissan believes that the industry has improved fuel efficiency of modern vehicles greatly over the past several years. This improvement is not evident unless viewed in the light of other vehicle changes. For example, market forces have created the demand for other vehicle attributes such as higher horsepower and larger vehicle size. As a result, corresponding improvements in fuel efficient technologies were required and developed to prevent decreases in fuel economy levels. Other factors in the marketplace, likewise, act as barriers to improved

fuel economy. For example, negative public perception of some technologies (e.g., diesel's poor image despite improvements in emissions technology) and competing features that may be affected by increased fuel economy (e.g., safety, cargo/passenger capacity, etc.) prevent introduction of improved fuel efficient technologies. Nissan urges NHTSA to keep these factors in mind when considering reasonable increases in CAFE standards.

### C. Manufacturer Lead Time Considerations

***NHTSA Question 16.*** *In examining the three paths that were chosen, please comment on whether they represent likely scenarios for technology bundling. If not, please comment on which technologies are likely to be bundled together and please identify the specific vehicle types and vehicles/models that might include them. In addition, please comment on the technologies already included on the vehicle types/models, the projected vehicle weight and the percent of total model sales anticipated for each model (i.e., CVT - 45%, 5-Speed Automatic - 40%, 5-Speed Manual – 5%). Finally, please comment on the assumptions the NAS made in evaluating the three paths. Are there more plausible alternative assumptions?*

***NHTSA Question 19.*** *Do you agree with the figures derived in the NAS break-even analysis? If not, why? Please address specific areas of differences, explain your reason(s) why, and provide supporting data for your reasons and arguments.*

As is typical in the automobile manufacturing industry, changes to Nissan's models occur on an approximately four to five year cycle. Introduction of new fuel efficiency technologies typically coincides with this schedule. Therefore, introduction of new fuel efficient technologies may take several years to introduce. In addition, because such technologies are gradually adopted in each model line, the fleet-wide penetration of such technologies is also gradual. Thus, actual fuel efficiency improvement resulting from the introduction of new technologies is at a slower rate than estimated in the NAS report. Nissan estimates that with taking into account the four to five year model change cycle and the gradual penetration of new technologies into the entire fleet, that widespread penetration of even existing technologies will likely require anywhere from four to eight years. For emerging technologies that require additional research and development, this time lag can be considerably longer.

With respect to the NAS break-even analysis, Nissan does not believe these figures are entirely accurate. [redacted]

[redacted] Nissan believes that NHTSA must take into account how existing technologies have already been incorporated into existing vehicle lines and future plans, as well as the market demand for competing vehicle attributes when determining the appropriate increase for CAFE standards.

### D. Effect of Increased Standards on Weight and Safety

***NHTSA Question 1.*** *The NAS Study found that the CAFE program, as currently structured, has contributed to traffic fatalities and injuries. As an agency whose primary responsibility is safety and is therefore deeply concerned about the NAS finding, NHTSA requests comments on this NAS finding. Among our questions are: Is the safety impact understated or overstated? Would NAS's proposed changes to CAFE reduce this safety penalty? Could CAFE standards be modified so that manufacturers are encouraged to achieve improved fuel economy through application of technology instead of through downsizing and downweighting? NHTSA requests comments on the extent to which increases in light truck fuel efficiency are feasible during MYs 2005-2010 and on whether any of these increases would involve means -- such as significant weight and size reduction -- that could adversely affect safety. We note that the NAS found that if future weight reductions occur in only the heaviest of the light-duty vehicles, that can produce overall improvements in vehicle safety. If there would be adverse effects, how could they be mitigated?*

***NHTSA Question 8:*** *To what extent are other Federal standards likely to affect manufacturers' CAFE capabilities in MYs 2005-2010? Answers to this question should include not only the effects of such standards when first implemented, but also the prospect for reducing those effects subsequently.*

Any future changes in the fuel economy standards must take into account competing priorities. For example, automobile manufacturers' efforts to increase fuel

economy are often frustrated by other challenging requirements to improve emission controls and meet new safety requirements. In addition, vehicle manufacturers' advances in fuel efficiency are often hampered by insufficient attention or lack of action in other areas, such as fuel standards. Efforts to comply with these other requirements not only adversely affect vehicle fuel efficiency in some instances, but also inhibit the introduction of more fuel efficient vehicles. Such efforts take away funding, time, and engineering resources available for research on future fuel efficiency improvement. In some instances, fuel efficiency improvement cannot be accomplished solely by the automobile manufacturers' efforts, but have to rely on other industry's technology improvement. These competing priorities are summarized as follows:

Vehicle manufacturers have invested tremendous amount of resources to research and develop such technologies to comply with U.S. emission standards, the most stringent in the world. If fact, some of these standards are so ambitious that the NAS report even acknowledged that the new Tier 2 standards may preclude additional advances in fuel efficiency technologies. Specifically, while the NAS report recognized two new technologies - diesel combustion technologies and gasoline direct injection engines that operate under lean-burn combustion – as emerging technologies, the report concluded that neither technology can be implemented now given the new more stringent emission limits imposed by the Tier 2 standards. Further increases in the stringency in the standards (SFTP enhancements, Tier 3, etc.) will even further tax research and development resources and may prevent further implementation of fuel efficient technologies.

Advances in fuel efficiency are also hampered by other regulatory requirements imposed on vehicles manufacturers. For example, additional technologies necessary to meet various motor vehicle safety standards add weight to the vehicle and often decrease fuel economy. Further, some of the technologies divert power from the drivetrain, resulting in lower fuel economy. For example, manufacturers must meet the side impact standards of FMVSS 214. In order to comply with such standards, steel beams are often used to reinforce doors and side panels. This additional weight detracts from fuel economy gains achieved through technology. To offset such weight gains, the automobile manufacturers have been researching the use of light, yet strong materials. However, the future technological development of such materials is dependent on the efforts of the materials industries. For example, while high tension steel has a strong potential to be used in automobiles, its formulation, adhesiveness, cost, and accuracy require additional research before such materials are commercially viable. Thus, NHTSA

needs to take into consideration other industries' technology efforts as well, when implementing any changes in the future fuel efficiency standards. Another examples involves fuel regulation. Until fuels are more tightly regulated, many new fuel efficient technologies can not be applied. For example, lean burn technology, which can increase fuel efficiency, cannot be implemented with today's fuels due to high levels of sulfur allowed in fuels. Until allowable fuel sulfur levels are lowered, lean-burn technology is not available. Accordingly, as NHTSA examines the appropriate fuel efficiency increases, Nissan urges the Agency to examine factors outside the control of manufacturers and address those issues as part of an effort to increase CAFE standards.

## II. Fleet Split Issue

***NHTSA Question 12.*** *Please comment on the effect that elimination of the two-fleet rule would have on manufacturers, consumers, employment, the U.S. marketplace, and on the automotive industry in general. The elimination of the two-fleet rule, providing for a domestic passenger car fleet and an import passenger car fleet, has been suggested as a possible modification to CAFE. The distinction is based on the proportion of the car's value that is defined as being domestic; an import is defined as a car with less than 75 percent domestic content. If a manufacturer has both a domestic passenger car fleet and an import passenger car fleet, each fleet must separately meet the passenger car standard. If this rule were eliminated, such a manufacturer could place all its passenger cars in a single fleet.*

Nissan has made a significant investment in the US and in North America. The Company's domestic vehicle production accounts for 70% of the total vehicles sold in the U.S. Nissan vehicles manufactured in North America, such as the Altima, Frontier Truck, Xterra, and Quest also have a high percentage of local content. Allowing fleet-split requirements to continue will only disincentivise investment in the United States – the exact opposite goal of the fleet split provisions. For example, beginning with the 2005 MY, vehicles with at least 75% of assembly costs attributable to Mexico will be considered domestic vehicles under the NAFTA provisions, shifting the Nissan Sentra manufactured in Mexico from the import passenger car CAFE fleet to the domestic passenger car fleet. Although Nissan's overall passenger car fleet CAFE value will meet the current standard level of 27.5 mpg, the import passenger car CAFE without the Sentras will not comply with the level. As a result, after 2005, Nissan will be forced to consider moving the entire or part of the production of the Sentras outside the North

America or to decrease the Sentra's domestic content level, in order to keep the Sentra in the import passenger car fleet.

The original intent of the domestic and import fleet split provision was to prevent shift of smaller vehicle production to overseas and to prevent the corresponding decreases in demand for supplies, materials, and jobs in the U.S. Nevertheless, the requirement has not functioned as intended as proved by Nissan's example. Therefore, the fleet-split provisions should be eliminated. NAS itself recognized that the fleet-split provisions are not necessary to protect jobs in the United States. As provided in the report itself, "[t]he committee could find no evidence that the '2-fleet rule' distinguishing between domestic and foreign content has had any perceptible effect on total employment in the U.S. automotive industry." In fact, as demonstrated by the Nissan Sentra example, continuation of the requirement may result in the opposite effect – removal of investment in the U.S. Thus, Nissan believes that the domestic and import fleet split provision should be eliminated

## III. CAFE Credit Trading

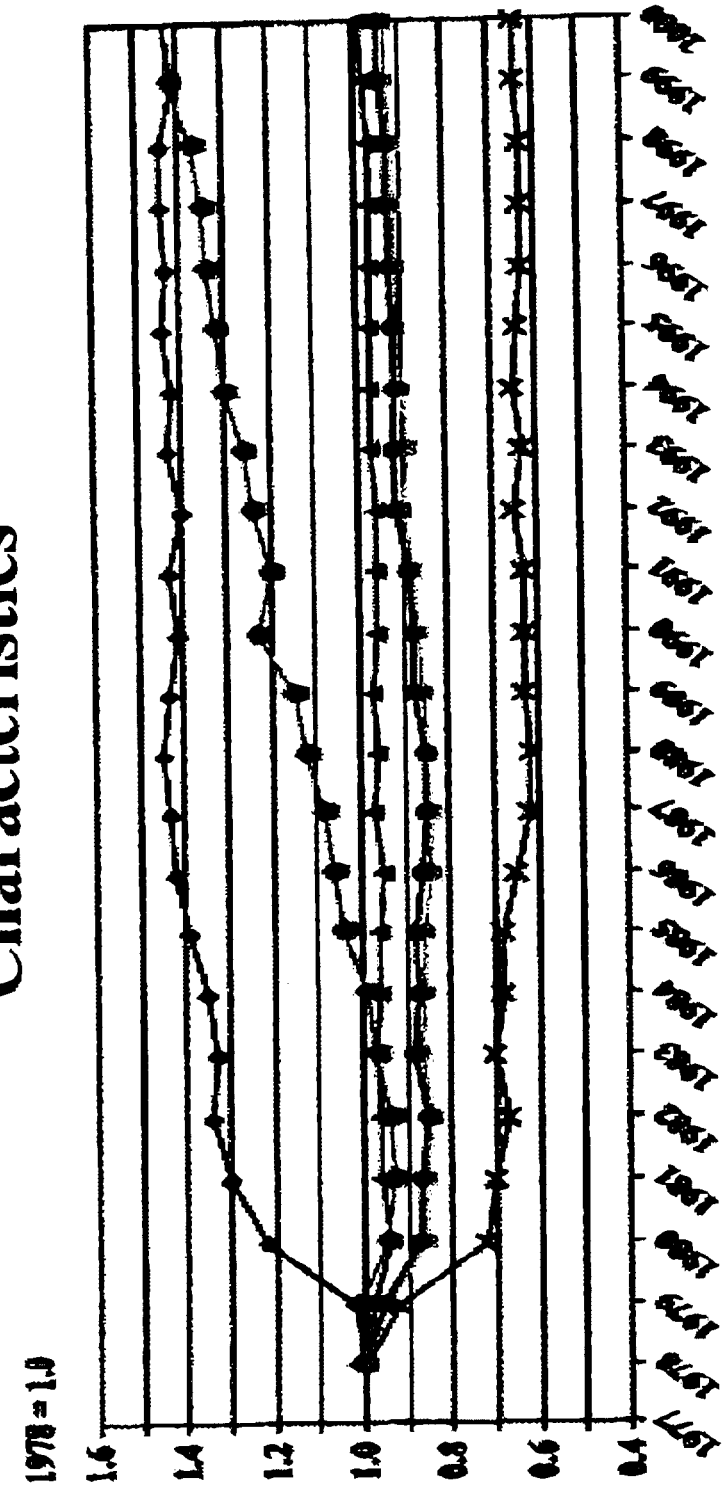
***NHTSA Question 10:*** *Please comment on the idea of an attribute-based system. Provide feedback on which attribute(s) such a system should be based on and the specific classes of vehicles that might fall under each class. In addition, please suggest the fuel economy level associated with each specific class of that attribute-based system (e.g., vehicles weighing from 2,000 lbs. GVWR to 2,500 GVWR would have to meet an average of xx.x MPG).*

The current "single standard" CAFE system has operated to the disadvantage of manufacturers of large vehicles over those that produce smaller vehicles. There is no question that a correlation between fuel efficiency and vehicle attributes, such as weight and size, exists. As noted in the NAS report as a recommendation, "[c]onsideration should be given to designing and evaluating an approach with fuel economy targets that are dependent on vehicle attributes, such as vehicle weight, that inherently influence fuel use." Nissan believes that in order to allow for the more equitable distribution of the fuel efficiency mandates, a weight-based CAFE system is more desirable. Further flexibility should be afforded within this structure to allow manufacturers to earn, bank and trade credits. Such a scheme would provide manufacturers with flexibility to meet increased CAFE standards and make use of as much current and new technology as possible.

## IV. Conclusion:

The setting of future CAFE standards is a complex issue and should be done with careful consideration of many issues, including technological feasibility, economic impacts, lead-time, and other competing requirements. Only by reviewing and taking into account all these factors can a feasible increase in CAFE standards be identified and implemented. In order to level the playing field for all vehicle manufacturers, Nissan also believes that consideration should be given to designing and evaluating a weight-based approach to the CAFE standards. In addition, although only possible through Act of Congress, Nissan believes that the so-called "fleet-split" rule should be eliminated. Taking into account these factors will allow NHTSA to increase CAFE standards to the maximum extent possible without imposing undue hardship or requiring technologically infeasible standards upon vehicle manufacturers. In order to allow manufacturers sufficient flexibility in meeting any new standard, Nissan finally urges NHTSA to consider implementation of a broad credit trading scheme.

# PASSENGER CAR FLEET AVERAGE Characteristics




Attachment 3